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Some Innovative Aspects of Health Saving Technologies in Physical Training

A person's health, first of all, depends on their lifestyle. This style is personified. It is defined by socio-economic factors, historic, national and religious traditions, beliefs, personal inclinations.

There are more than 300 definitions of the concept «**health**». According to the definition by the World Health Organisation, **health** is a condition of full physical, mental and social well-being, and not just the absence of any illnesses or physical defects. Health indicators are as follows:

- tolerance to the impact of damaging factors;
- indicators of growth and development within the average norm;
- the functional state of an organism within the average norm;
- presence of the reserve capacity of the organism;
- absence of any disease or defect of the development;
- a high level of moral-volitional and value-motivational goals.

The healthy lifestyle includes everything that helps a person to perform professional, public, family and household functions in the optimal health condition and determines an orientation of efforts of a person to preservation and strengthening of individual and public health.

The healthy lifestyle includes:

- a favorable social environment;
- spiritual and moral well-being;
- optimal physical activity pattern (the culture of exercise);
- rational nutrition;
- personal hygiene;
- refusal of bad habits (smoking, alcohol drinking, taking drugs);
- positive emotions.

The above-mentioned characteristics allow to draw a conclusion that the culture of a person's **healthy lifestyle** is a part of a general human culture which reflects its system and dynamic condition caused by a certain level of special knowledge, physical training, socio-cultural values, acquired as a result of education, value-motivational orientation and self-education realized in practical life activity, and also in physical and psychophysical health.

Health saving technologies are implemented on the basis of the person-oriented approach. Carried out on the basis of person-developing situations, they are related to those vital factors due to which students learn to live together and co-operate effectively. They assume an active participation of students themselves in the development of the culture of human relations. The tech-

nologies are implemented while getting the health saving experience through a gradual expansion of the communication sphere and a pupil's activity, development of his self-control (from external control to internal self-control), formation of consciousness and active life position on the basis of education and self-education, formation of responsibility for his or her health, life and other people's health. According to V.V. Serikov, the technology of any sphere is an activity which has the maximum degree of reflecting of the objective laws in the given subject sphere, constructed according to the logic of the development of this sphere and consequently providing for the given conditions the greatest conformity of the activity result with the preliminarily formulated aims. Following this methodological regulation, a technology, with reference to the problem stated, can be possibly defined as a health saving pedagogical activity which builds new relations between upbringing and education, translates upbringing in the framework of a human development and life support process aimed at the preservation and augmentation of the child's health. Health saving pedagogical technologies should provide the development of the child's natural abilities: his or her mind, moral and aesthetic feelings, activity requirements, mastering in the initial experience of communication with people, nature and art.

The classification of health saving technologies:

According to the activity character, health saving technologies can be special (highly specialised) and complex (integrated).

According to the direction of the activity among special health saving technologies we single out: medical (technologies of the disease prevention; correction and rehabilitation of somatic health; sanitary and hygienic activities); educational, health-improving (informational, training and educational); social (technologies of the organisation of a healthy and safe lifestyle; preventive measures and correction of the deviant behaviour); psychological (technologies of preventive measures and psychocorrection of the mental deviations of personal and intellectual development).

We consider the following **technologies as complex health saving**: technologies of complex disease prevention, correction and health rehabilitation (physical training health-improving and valeological); pedagogical health-improving technologies; healthy lifestyle technologies.

Physical training is a component of the whole educational process in a **higher educational** institution. It is aimed at improving of the student's health, increasing their working capacity and is necessary for preparing professionals who can physically and morally meet the

requirements of the modern industry.

The students' health state and their disease resistance are connected with the reserve capacity of the organism, the level of its body defences conditioning the stability in relation to any adverse external influences. Frequent morbidity among students is due to the physical detaining and insufficient physical activity. The growing organism is especially in need of muscular activity, therefore insufficient physical activity which has not been compensated by the necessary intensive and adequate physical exercise, leads to the development of a number of diseases.

In the majority of high schools some part of the students have weakened health, various chronic diseases of cardiovascular, respiratory and other systems, musculoskeletal system failures. These students due to their health state and physical fitness are enrolled in a special medical group. They cannot fully master the typical physical training program. Therefore, there is a necessity for the research of such forms and methods of physical rehabilitation (recovery) of students with weakened health and relative deficit of free time which allow them to strengthen their health and improve their physical fitness in the course of physical training.

The long-term work experience shows that an introduction of physiologically proved and strictly regulated system of physical exercises in the student's schedule of educational and recreational activities contributes to the improvement of their health state and an increase of the working capacity level.

Regular and correctly organised studies on physical training are of great importance for the physical rehabilitation of students with various health disparities. The task is to use such means and methods for the studies which very promptly improve and normalise the functional condition of the affected organs and organism systems, restore the general (physical and intellectual) working capacity of students with weakened health.

Physical training of the students with weakened health according to the curriculum should be aimed at:

1. Gradual and consecutive strengthening of health, tempering of the organism and enhancement of physical working capacity level;
2. Elimination of functional disparities and defects of the physical development, liquidation of the residual phenomena after diseases, development of compensatory functions, increase of nonspecific tolerance of the organism to adverse influences of the environment;
3. Possible training of the basic physical qualities (endurance, quickness, force, dexterity), training of motor skills and learning the rules of competition refereeing at the physical training studies and in sports;
4. Acquisition of the necessary professional and practical skills;
5. Learning of the conscious necessity for regular practicing of physical exercises, the acquisition of knowledge and skills of hygiene and basic self-control notions at physical training classes.

Due to the fact that students with various health disparities have different degrees of adaptation to physical activities (even in case of the students with identical diseases), an important requirement in the course of study is an individual approach. An important part of the organisation of studies is control over the dynamics of physical working capacity and physical fitness of stu-

dents throughout all period of their training. Control exercises and tests are used for estimation and self-checking of the progress, allowing to reveal the dynamics of training certain physical qualities, and also the degree of mastering professional, practical, organising, instructor and refereeing skills and knowledge. While giving an estimation and carrying out self-checking of the progress it is necessary to be guided by the improvement of results of control exercises performance by the student from one term to another, and not by the obligatory performance of any certain numerically-standard volume of exercises or physical activities.

Starting regular practice of physical exercises each student should know the morphofunctional disorders that arise in the organism suffering from this or that disease. It is necessary to use simple and accessible techniques of control and self-control of the functional state of cardiovascular, respiratory and other systems and define the general physical working capacity. The absence of such regular control does not allow students and teachers of physical training to distribute physical load correctly throughout the term and academic year.

It should be noted that the majority of students even having a positive attitude to physical training and sports don't have a physical necessity for active exercise. Physical exercises are not the valuable motives of behaviour for them. Therefore, the major problem is the development in young people of a habit to be regularly occupied with physical exercises which they should keep for life. Except for the beneficial effect on the health state these studies also cultivate high self-discipline and purposefulness in the future professionals contributing to the successful solving of professional problems they may face.

Physical rehabilitation of students with weakened health becomes more and more important as the volume of curriculum workload and the quantity of received information which causes a considerable physical, mental and nervous tension increases while the terms of communication are left the same. Spending a lot of time sitting at the lessons and preparing for final tests and examinations leads to hypodynamia and, as a result, adiposity, spinal curvature, visual impairment that necessarily decreases a functional flow of the organism and a student's health state. This decrease becomes more and more apparent from year to year. According to the statistics, if in 1970s only one out of nine students had any health disparities, now every third person suffers from them.

One of the most effective means of switching of the nervous activity and creating preconditions for the working capacity increase and health strengthening is the regular physical exercise. It is very important for the students with various health disparities who, as a rule, are enrolled in special medical groups for physical training.

It is important to raise the problem of the increase of efficiency of health improving activities for the students with weakened health due to the fact that its solution will allow to define the ways of more purposeful use of methods, forms and means of physical training to normalise the functional condition of organs and systems of the weakened organism, improve the physical development and stimulate growth of the control indicators characterising physical fitness.

The students of special medical groups, of course, should not be engaged in physical training under the

programmes developed for their healthy and physically trained peers. Both the technique and the organisation of classes for the students of special groups are more difficult. Special attention should be paid to the correctness of assessing the efficiency of the studies (training), and also the general regimen of the students.

The students who have sustained any disease owing to the insufficient physical activity are in an especially non-favorable position. For a long time (for many weeks and months) they appear to have no active physical exercises or, at the best, receive a small «dose» of physical activities, far from satisfying the organism requirements. Meanwhile, all modern knowledge in the field of physiology, hygiene and clinical medicine is indicative of a special necessity of the physical activity for such students, and not only for educational purposes, full development and mastering the future profession, but also for medical purposes due to the sustained disease.

The process of physical self-education of the students with serious health disparities and exempt from the practical studies of physical training for a long period is of great importance. Many such young people are found at any high school every year and their number steadily increases. Only disabled people and students who have got such a release from the clinical expert commission due to an acute disease or trauma, as well as aggravation of a chronic disease, should fall into this category.

On the one hand, these students are deprived of the opportunity to attend practical training classes, but on the other hand, it is very important for them to acquire the knowledge and skills in the field of physical training. Regular self-checking is very important for the given contingent. Under these circumstances stimulating motivated, active and purposeful self-education in the students by the development of a need for physical exercise and use of other means of physical training is very important.

As our experience shows, one of the most effective ways of successful organizational work with this group of students is to conduct it in the form of a purposeful educational and research activity in combination with independent practicing of physical exercises and tempering, as well as regular self-checking.

While doing physical exercises independently, it is very important to check regularly the way you feel and the general health state. Everyone who takes physical exercises should regularly use a number of simple methods of self-diagnostics (self-checking) to supervise the change of the health state and physical development. It will give a chance at a necessary moment to learn the peculiarities of the influence of physical activities on the organism and to understand the changes of its condition. However, it is necessary to remember that self-diagnostics serves only as an important addition to medical diagnostics, but cannot completely replace it.

The regular self-diagnostics allows to get good knowledge of the peculiarities of the organism and promotes revealing of the earliest signs of a disease or overfatigue: changes of the health state and mood, occurrence of slackness, apathy, or, on the contrary, irritability, anorexia, exhaustion after carrying out any physical or mental work, and also occurrence of unusual feelings (depending on the type of the disease) – heaviness in the head and feet, ache in joints, cough, cold, temperature rise.

For the students with the weakened physical development self-checking is especially important because it allows them to feel the health improving value of physical training. Besides, self-checking allows to estimate subjective sensations, gives the opportunity to avoid frequent cases of the adverse influence of taking physical exercises that may occur at overdose and also overloading the student's organism without checking its current functional condition.

Students with health disparities, as a rule, are behind in their physical development and physical fitness, the function of the external respiratory apparatus is lowered and its regulation is broken. It leads to the decrease in the volumetric speed of ventilation, force reduction of respiratory muscles and reduced efficiency of general ventilation. The latter is expressed in the reduction of the oxygen ratio and, hence, hypoventilation.

The use of respiratory exercises brings a strong influence on the student's organism. According to the observation, the students who regularly do respiratory exercises improve their intellectual working capacity, decrease fatigue at lectures and practical classes. According to our data, the effect of rational respiration is beyond the problems of physical training and is a considerable factor of the increase of the student's professional working capacity.

The major factor which provides health improving for the students with weakened health is the choice of certain correlations of the applied means of physical training, and also their methodically correct combination on the assumption of an exact dosage.

The differentiated and, finally, individual approach to this category of students is not only an indispensable condition of the cultivation in them the need for regular physical exercises, but also the main means of forming this need and factor of a healthy lifestyle. All these students appear to have the greatest diligence at the academic studies and at doing their home assignments trying to compensate for the existing physical defects.

Physical training exercises for students of special medical groups are based on three main principles.

The first principle for students of special medical groups is a fundamental one in the health improving and medioprophylactic direction. At the beginning it is necessary for the given category of students to be engaged in health improving activities, elimination of the disorders due to the sustained disease, and also its possible complications.

The second principle of physical training of the students of special medical groups is the differentiated approach to the use of physical training means at the lessons. Taking into account functional disorders of the student's organism, special exercises should be chosen individually by the instructor to ensure the reduced load for other functional systems.

The third principle that should be observed in physical training of the students of special medical groups is its professional and practical orientation. During the lessons the instructor should help students not only to improve their health, but acquire all the necessary motor skills required by the profession as well. Therefore, the whole process of physical education should be implemented according to the requirements of the future profession.

While organising a special medical group, the in-

structor should know the students' diagnoses, the functional state, and also the level of their physical fitness that can be measured by motor tests, such as spiral flexibility, muscle-strengthening exercises and 1-2 minute Cooper's test.

Before starting a lesson in a special medical group, the instructor should get to know the doctor's diagnoses and recommendations for the students.

The exercises with breath-holding, straining and static effort, rapid acceleration are contra-indicated to the students with cardiovascular system disorders. It is recommended for them to do exercises of the general character that include all the groups of muscles in lying, sitting and standing position, and graduate race walking.

The breath-holding exercises are contra-indicated to the students with respiratory diseases. Much attention should be paid to those breathing exercises that stimulate full-lungs respiration, especially deep expiration. The deep expiration is trained by the exercises of breathing out through your lips and pronouncing vowel sounds ([a:], [u:], [e:], [i:], [o:]) and consonants ([r], [s], [z], [j]). These exercises should be recommended to be practiced at home 3-5 times a day.

While training the students with kidneys diseases, the physical activity is decreased, jumps are excluded, and body exposure to cold is not permitted. During the general exercises special attention should be paid to abdominal muscle strengthening.

There is a limitation in exercises for students with nervous system disorders.

Students with visual impairment cannot make jumps, somersaults and straining effort exercises, for those with chronic diseases of the gastrointestinal tract, gallbladder or liver the activity of the abdominal muscles is reduced and jumps are restricted.

All the lessons should be emotional; during the process of rehabilitation of the students with weakened health it is necessary to make them forget about their illnesses, make them feel healthy, bright and cheerful.

In the educational process for special medical groups a special periodization should be applied.

One month preparatory period is intended for solving the main health improving tasks:

- 1) to train respiratory and cardiovascular systems, prepare students for physical activity;
- 2) to teach fast finding and correct counting of the pulse rate;
- 3) to teach elementary skills of self-checking and diary keeping.

Later on, during the next period the main work is made to recover the impaired functions of the student's organism and train it for professional and practical activity. The period's duration depends on the adaptation of the student's body to physical activities, the health state and flexibility and stability of the nervous system.

The guiding principle in working with students of special medical groups is a differentiated approach, proportioning of physical activities taking into account the student's individual special features. This principle can be successfully used in practice under the following

conditions:

- the arrangement not according to height, but physical abilities: the more trained are to the right side and the less trained are to the left side;
- students should have their heart rate measured before the lesson. Those with the heart rate of over 80 bpm (beats per minute) go to the left side;
- while playing games, the less trained should be changed every 2 minutes;
- in the first term it is recommended that at least 5-7 minutes of the main part of the lesson should be devoted to carrying out an individual work that includes exercises advised by the doctor depending on the diagnosis.

It is very good to conduct lessons with a music background. Specially selected music has a beneficial effect on the physiological process of the central nervous system and creates an emotional mood. The melodies are selected according to the required tempo and pattern of the performed exercises.

It is necessary to know that the proper effectiveness of the lessons can be provided only by creative use of didactic principles.

The principle of comprehensiveness is based on the physiological statements of the qualities correlation and it provides for harmonious organism development.

The principle of deliberateness is aimed at training the students to understand clearly the role and the value of the lessons to strengthen their health and to increase their intellectual work capacity.

The principle of gradual development provides for gradual but steady increase of the exercises' complexity, passing from less complicated to more complicated ones.

The principle of repeatability is based on the physiological data of the value of the repeated influence on the organism to form a stereotype motor skill.

The principle of individualization provides for the use of physical training means that correspond to the health state, age, sex, functional and psychological characteristics of students.

It is worth mentioning that the greater part of the classes we recommend to spend in the open air, using surrounding nature and hygiene factors to stimulate student's organism tempering more effectively.

The dedicated use of all these factors has resulted in raising the functional reserves of the students' organisms in this group, the reduction of catarrhal diseases from 43% to 28% and the decrease of sickness absenteeism at academic lessons by 39,6%.

Thereby, in training of the students with weakened physical development we always have a reliable and efficient estimation of their physical fitness, and it allows to choose the proper strategy of proportioning the physical activities at our lessons. The idea of dedicated monitoring in physical exercises allows us to recommend these systems for use in training and give specific practical instructions to accomplish such systems. These instructions are aimed at individualization and optimization of the motor activity that is done by the students of special medical groups for health-improving purposes.